UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,882	04/15/2002	Yan Yonghong	42390.P8351	8063

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EXAMINER
WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-13,15-20,22-28 and 30* is/are rejected.

7)☒ Claim(s) *6,14,21 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1.   The listing of references in the specification is not a proper information disclosure

statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information

submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be

incorporated into the specification but must be submitted in a separate paper." Therefore, unless

the references have been cited by the examiner on form PTO-892, they have not been

considered.

Claim Objections

2.   **Claims 4, 12, 19, and 27** objected to because of the following informalities:

In line 3 of claims 4, 12, 19, and 27, "the error words" should be changed to --error

words-- in order to provide proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   **Claims 1-3, 7-11, and 15** are rejected under 35 U.S.C. 102(e) as being anticipated by

Goronzy et al *(U.S. Patent: 6,799,162)*.

With respect to **Claim 1**, Goronzy discloses:

Calculating estimated weights for identified errors in recognition of utterances *(speech*

recognition reliability score calculation, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-

67);

Marking sections of the utterances as being misrecognized and associating the

corresponding estimated weights with these sections of the utterances *(low confidence score*

speech signal sections that are assigned a corresponding adaptation strength weight, Col. 3,

Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67); and

Using the weighted sections of the utterances to convert a speaker independent model to a

speaker dependent model *(model adaptation performed at an adaptation module that utilizes*

adaptation strength weights, Col. 7, Lines 63-67; and Col. 3, Line 48- Col. 4, Line 37).

With respect to **Claim 2**, Goronzy recites that model adaptation can be repeatedly

performed *(Col. 3, Lines 43-47)*.

With respect to **Claim 3**, Goronzy discloses:

The utterances are converted into a recognized phone string a first time through applying

the speaker independent model (initial adaptation of a speaker independent model, Col. 7, Lines

7-25; and phoneme recognition, Col. 4, Lines 50-56); and

Thereafter through applying the most recently obtained speaker dependent model *(further adaptation of speaker adapted models, Col. 6, Lines 4-15)*.

With respect to **Claim 7**, Goronzy discloses that different misrecognized words may have a different weight *(strength of an adaptation weight based on a confidence score, Col. 4, Lines 24-37)*.

With respect to **Claim 8**, Goronzy recites:

Recognizing utterances through converting the utterances into a recognized phone string *(recognition of a user utterance, Col. 3, Lines 48-62; and phoneme recognition, Col. 4, Lines 50-56)*;

Comparing the recognized phone string with a reference phone string (confidence score calculation process, Col. 3, Line 48- Col. 4, Line 23);

Calculating estimated weights for identified errors in recognition of utterances *(speech recognition reliability score calculation, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67)*;

Marking sections of the utterances as being misrecognized and associating the corresponding estimated weights with these sections of the utterances *(low confidence score speech signal sections that are assigned a corresponding adaptation strength weight, Col. 3, Line 48- Col. 4, Line 37; and Col. 7, Lines 26-67)*; and

Using the weighted sections of the utterances to convert a speaker independent model to a speaker dependent model *(model adaptation performed at an adaptation module that utilizes adaptation strength weights, Col. 7, Lines 63-67; and Col. 3, Line 48- Col. 4, Line 37)*.

With respect to **Claim 9**, Goronzy teaches the use of a speaker independent model in speech recognition *(speaker independent model, Col. 7, Lines 7-25)*.

With respect to **Claim 10**, Goronzy discloses:

Steps b-e are repeated until differences between the reference and recognized strings are less than a threshold *(adaptation performed until a confidence score is below a threshold, Col. 3, Lines 48-62)*.

Claim 11 contains subject matter similar to Claim 3, and thus is rejected for the same reasons.

Claim 15 contains subject matter similar to Claim 7, and thus is rejected for the same reasons.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   **Claims 4-5, 12-13, 16-20, 22-28 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Goronzy et al in view of Junqua *(U.S. Patent: 6,253,181)*.

With respect to **Claims 4 and 12**, Goronzy teaches the speaker adaptation system utilizes weighted adaptation according to a recognition reliability score, as applied to claims 1 and 8. Goronzy does not teach that the weights are calculated through computing an average likelihood

difference per frame and then computing a weight value by averaging the average likelihood

difference over all the error words, however Junqua discloses a calculation of a likelihood

difference used in determining a speaker adaptation that utilizes an average of likelihood scores

associated with an incorrect recognition *(Col. 4, Lines 9-24; and Col. 5, Lines 15-67)*.

Goronzy and Junqua are analogous art because they are from a similar field of endeavor

in speaker adaptation systems. Thus, it would have been obvious to a person of ordinary skill in

the art, at the time of invention, to modify the teachings of Goronzy with the likelihood

difference calculation taught by Junqua in order to implement a high speed speaker adaptation

system that is capable of providing a measure of recognition reliability *(Junqua, Col. 3, Lines 29-*

31; and Col.4, Lines 9-24).

With respect to **Claims 5 and 13**, Junqua further discloses an equation similar to that

recited in claim 5 for determining a log-likelihood difference in a speaker adaptation process that

utilizes an average of likelihood scores *(Col. 5, Lines 15-67; and Col. 4, Lines 9-24)*.

With respect to **Claims 16 and 23**, Goronzy teaches the speaker adaptation system

utilizes weighted adaptation according to a recognition reliability score, as applied to claims 1

and 8. Goronzy does not specifically suggest method implementation as a program stored on a

memory medium, however Junqua discloses a speaker adaptation method implemented using a

processor and associated memory that provides a practical speaker adaptation process in a

hardware system *(Col. 7, Lines 10-14)*.

Claims 17-20 and 22 contain subject matter similar to claims 2-5 and 7, and thus, are

rejected for the same reasons.

   Claims 24-28 and 30 contain subject matter similar to claims 9-13 and 15, and thus, are rejected for the same reasons.

Allowable Subject Matter

7.   **Claims 6, 14, 21, and 29** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8.   The following is a statement of reasons for the indication of allowable subject matter:

   With respect to **Claims 6, 14, 21, and 29**, the prior art of record fails to explicitly teach or fairly suggest a method for speaker adaptation that utilizes estimated weights based on misrecognized speech utterances, wherein the estimated weights are calculated by multiplying an average likelihood difference per frame calculated using the equation recited in claims 5, 13, 20, and 28 by the inverse of a number of misrecognized words for a particular speaker as per the equation recited in claims 6, 14, 21, and 29.

   Although Junqua *(U.S. Patent: 6,253,181)* teaches an equation for calculating an average likelihood difference, Junqua does not teach multiplying the calculated average likelihood by the inverse of a number of misrecognized words for a particular speaker as per the equation recited in claims 6, 14, 21, and 29.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

Larkey *(U.S. Patent: 5,127,055)*- teaches a method for changing a speech recognition

model quality score based on a correctness of speech recognition processing.

Nguyen et al *(U.S. Patent: 6,205,426)*- teaches a method for speaker adaptation using a

likelihood difference in a weighting procedure.

Sejnoha *(U.S. Patent: 6,260,013)*- teaches a method for speaker adaptation using a

weighted gradient.

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632.

The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
3/22/2006

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
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